

REMARKS

After entry of this amendment, claims 1-6, 9-17, and 20-35 remain pending. In the present Office Action, claims 1 and 12 were provisionally rejected under the judicially-created doctrine of double patenting over claims 1 and 27 of copending application serial no. 10/008,255 ("copending application"). Claims 1-29 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 1, 7-8, 12, and 18-19 were rejected under 35 U.S.C. § 102(b) as being anticipated by Feinberg et al., U.S. Patent No. 5,910,903 ("Feinberg"). Claims 2-6, 13-17, and 23-29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Feinberg in view of "Handbook of Simulation" edited by Jerry Banks ("Banks"). Claims 9-11 and 20-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Feinberg in view of "Concepts of Programming Languages" by Robert Sebesta ("Sebesta"). Claims 1-29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Feinberg in view of Sano et al., U.S. Patent No. 5,991,553 ("Sano"). Applicants respectfully traverse these rejections and request reconsideration.

Claims 1-22

Applicants respectfully submit that each of claims 1-22 recites a combination of features not taught or suggested in the cited art. For example claim 1 recites a combination of features including: "a hub coupled to the first node and the second node, wherein the hub is configured to route the message packets from the first node to the second node and from the second node to the first node".

The present Office Action alleges that the hub is taught by Feinberg's "computer control" (see Office Action, page 7, item 6). Presumably, the Office Action is referring to the control computer 200 in Fig. 2 of Feinberg. Applicants respectfully disagree that Feinberg teaches the above recited hub. Feinberg teaches, with respect to Fig. 2, that "the present invention is overlaid onto the distributed simulation of Fig. 1 without disturbing how the distributed simulation of Fig. 1 operates" (Feinberg, col. 4, lines 26-28). With respect to Fig. 1, Feinberg teaches "The DIS software 110 on each simulation component 100 broadcasts Protocol Data Units ('PDUs') 120 to the DIS software 110 on each of the

other simulation components 100. Each PDU 120 comprises information about the particular simulation entity 130 running on the simulation component 100 on which the DIS software 110 is resident so that each simulation component 100 may determine the relationship between each of the simulation entities 130" (Feinberg, col. 1, lines 59-67). Thus, Feinberg's simulation components communicate PDUs directly with each other to perform a distributed simulation. Furthermore, Feinberg's teachings that his invention operates "in the background" (see, e.g., Feinberg, col. 7, lines 13-19) and "without disturbing how the distributed simulation operates" (see, e.g., Feinberg, col. 4, lines 27-28) teaches away from operating the control computer as a hub or inserting a hub.

Feinberg's control computer 200 collects data from the simulation components, observes the simulation for proper internal operation of models and proper interaction of models, analyzes simulation results, and enables optimization (Feinberg, col. 3, lines 41-45). Feinberg further teaches "the agent-applications 230 are programs designed to be sent to the simulators 100 to perform specific tasks such as gathering data from a simulator 100 regarding the resources of the simulator 100 or data provided to or generated by the simulation 130 resident on the simulator 100. Conversely, tools 240, 250 and 260 are designed to operate while resident on the control computer 200... the agent-applications monitor the simulation entity 130 and gather data relating to the simulation entity 130 such as what information input does the simulation entity 130 have (e.g., what information is in the PDUs that the simulation entity 130 is receiving or sending, how often are PDUs received/sent, etc.), or about the simulation component 100 system resources (e.g., what available random access memory, hard disk storage space, processing power, and/or communication bandwidth is available to the simulation component 100)...data gathered by the executing agent-applications 360 and/or pre-analyzed data as described above in step 420 is transmitted to the local control software 210 preferably to a data module 340 of the control software 210. Data module 340 may store the transmitted data in a database 350 for later use such as analysis by one or more of the tools 240, 250 or 260 or data module 340 may provide transmitted data directly to one or more of the tools 240, 250 and 260" (Feinberg, col. 5, lines 9-16 and 51-60; and col. 6, lines 12-20). Accordingly, Feinberg's control computer gathers data for analysis.

Feinberg's control computer is not "a hub coupled to the first node and the second node, wherein the hub is configured to route the message packets from the first node to the second node and from the second node to the first node" as recited in claim 1.

For at least all of the above stated reasons, Applicants respectfully submit that claim 1 is patentable over the cited art. Claims 2-11, being dependent from claim 1, are similarly patentable over the cited art for at least the above stated reasons. Each of claims 2-11 recite additional combinations of features not taught or suggested in the cited art.

Claim 12 recites a combination of features including: "communicating at least signal values during the simulating using message packets formatted according to a grammar; and routing the message packets through a hub coupled to the first node and the second node". The teachings of Feinberg highlighted above with regard to claim 1 also do not teach the above highlighted features of claim 12. Accordingly, Applicants respectfully submit that claim 12 is patentable over the cited art. Claims 13-22, being dependent from claim 12, are similarly patentable over the cited art for at least the above stated reasons. Each of claims 13-22 recite additional combinations of features not taught or suggested in the cited art.

Claims 23-27

Applicants respectfully submit that each of claims 23-27 recites a combination of features not taught or suggested in the cited art. For example claim 23 recites a combination of features including: "a first model comprising a representation of logic to perform a non-blocking assignment and logic to schedule a call of at least a first code sequence responsive to the non-blocking assignment, and the first code sequence comprising instructions executable to sample output signals and drive input signals of a second model".

The Office Action alleges that it would be obvious to incorporate non-blocking assignments into a simulation, referring to Applicants specification discussing such

assignments as part of the IEEE 1394 standard and also referring to Bank's teachings regarding validation (see Office Action, page 11, first paragraph). Applicants respectfully submit that even if, *arguendo*, the analysis in the Office Action is correct and incorporating non-blocking assignments into the simulation would be obvious, that still would not teach or suggest "a first model comprising ... logic to schedule a call of at least a first code sequence responsive to the non-blocking assignment". Furthermore, the above reasoning from the office action would not teach or suggest "the first code sequence comprising instructions executable to sample output signals and drive input signals of a second model" as recited in claim 23.

Applicants also note that the Office Action fails to provide a proper *prima facie* case of obviousness of claim 23 because it fails to provide a proper motivation to combine and/or modify the references. The Office Action states that "motivation to do so would be found in the nature of the system for which the simulation is designed, as well as the knowledge of one of ordinary skill in the art" (Office Action, page 11, last sentence). Such a broad, conclusory statement does not meet the requirements of a *prima facie* case, in which particular findings of motivation must be set forth and substantial evidence must be provided (see, e.g., *In re Kotzab*, 55 USPQ2d, 1313, 1317 (Fed. Cir. 2000): "Whether the board relies on an express or an implicit showing, it must provide particular findings related thereto...broad conclusory statements alone are not 'evidence'"). Similar deficiencies in the *prima facie* case exist for many other claims rejected under 35 U.S.C. § 103(a) in the present Office Action.

For at least the above stated reasons, Applicants submit that claim 23 is patentable over the cited art. Claims 24-27 depend from claim 23, and thus are patentable over the cited art for at least the above stated reasons as well. Each of claims 24-27 recite additional combinations of features not taught or suggested in the cited art.

Claims 28-29

Applicants respectfully submit that each of claims 28-29 recites a combination of features not taught or suggested in the cited art. For example claim 28 recites a

combination of features including: "count timesteps in a distributed simulation system; and cause a cycle-based simulator to evaluate a clock cycle in a model responsive to a number of the timesteps equaling a number of timesteps per clock cycle of a clock corresponding to the model".

The Office Action alleges that Banks teaches a cycle-based simulator, stating "Activity scanning is regulated by time increments, and thus is cycle-based". Applicants respectfully disagree. Banks teaches that "Activity scanning produces a simulation program composed of independent modules waiting to be executed. Scanning takes place at fixed time increments at which a determination is made concerning whether or not an event occurs at that time. If an event occurs, the system state is updated." (Banks, page 9, section 1.4.3). Banks' scanning at fixed time increments to determine if an event occurs and optionally updating system state has nothing to do with a cycle-based simulator. Particularly, this scanning for events at fixed time intervals has nothing to do with causing "a cycle-based simulator to evaluate a clock cycle in a model".

Furthermore, even if, *arguendo*, Banks did teach cycle-based simulators in general, this would still not teach or suggest "count timesteps in a distributed simulation system; and cause a cycle-based simulator to evaluate a clock cycle in a model responsive to a number of the timesteps equaling a number of timesteps per clock cycle of a clock corresponding to the model". Neither Feinberg, nor Banks, nor the alleged combination thereof teaches or suggests the above combination of features. Still further, the *prima facie* case of obviousness of claims 28-29 has not been established because a proper motivation has not been set forth, as highlighted above with regard to claims 23-27.

For at least the above stated reasons, Applicants submit that claim 28 is patentable over the cited art. Claim 29 depends from claim 28, and thus is patentable over the cited art for at least the above stated reasons as well. Claim 28 recites additional combinations of features not taught or suggested in the cited art.

New claims 30-35

Applicants respectfully submit that new claims 30-35 recite combinations of features not taught or suggested in the cited art. For example, claim 30 recites a combination of features including: "a hub coupled to the first node and the second node, wherein the hub is configured to route message packets from the first node to the second node and from the second node to the first node during simulation, the message packets including message packets that communicate at least signal values". Claims 31-35 depend from claim 30 and recite additional combinations of features not taught or suggested in the cited art.

Section 101 Rejection

Claims 1-22 were rejected as nonstatutory because they allegedly do not result in a physical transformation outside the computer and do not produce a concrete, tangible, and useful result. Applicants respectfully disagree, and respectfully submit that the claims, as filed, produce a concrete, tangible, and useful result. Merely to expedite prosecution, Applicants have amended claims 1 and 12 to recite "a simulation of the system under test comprises the first node simulating the first portion of the system under test and the second node simulating the second portion of the system under test". A simulation result is concrete and tangible, representing operation of the system under test when stimulated in the fashion performed during the simulation. Furthermore, the simulation result is useful (e.g. in locating and correcting bugs in the system under test prior to fabricating the system under test - see, e.g., specification page 1, lines 9-19).

Claims 22-29 were rejected as non-statutory for reciting a carrier medium, and the Examiner suggested using the term computer readable medium. Applicants have amended claims 22-29 to recite a computer readable medium, and respectfully submit that the rejection is overcome.

Nonstatutory Double Patenting

Applicants respectfully disagree with the nonstatutory double patenting rejection, at least with respect to some of the claims. However, Applicants respectfully request that

this rejection be held in abeyance until the claims are otherwise indicated as allowable, at which time Applicants will either request that the provisional rejection be cancelled if the copending application has not been allowed (see MPEP 804(I)(B) second paragraph) or will consider the filing of a Terminal Disclaimer. Applicants note that the filing of a Terminal Disclaimer to obviate a nonstatutory double patenting rejection is not an admission of the propriety of the rejection (see MPEP 804.02(II)).

CONCLUSION

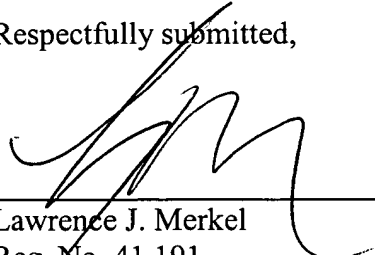
Applicants submit that the application is in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C. Deposit Account No. 501505/5181-96200/LJM.

Also enclosed herewith are the following items:

- ☒ Return Receipt Postcard
- ☐ Petition for Extension of Time
- ☐ Request for Approval of Drawing Changes
- ☐ Notice of Change of Address
- ☒ Please debit the above deposit account in the amount of \$480 for fees (\$180 IDS fee, \$200 for one excess independent claim, \$100 for 2 excess claims over 20).
- ☒ Other: IDS

Respectfully submitted,



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